

What is claimed is:

1. A flow control valve, wherein

inside a cylindrical casing (40), a meter-out inlet (43), a valve chamber (44), a rod chamber (46) for housing an adjusting rod (45) to be advancable and retreatable in an axial direction, and a meter-out outlet (47) are communicatively connected in that order,

a throttle valve seat (59) is provided on a leading end portion of the adjusting rod (45), and the throttle valve seat (59) is communicatively connected to the meter-out outlet (47) via a communicating passage (60) inside the adjusting rod (45),

10 a check member (52) inserted in the valve chamber (44) is urged toward the throttle valve seat (59) by an elastic member (54), and

the throttle valve seat (59) and the check member (52) can be moved relatively by advancing and retreating the adjusting rod (45) in the axial direction, and thereby, a throttle gap (G) formed between at least one of a peripheral wall (44a) of the valve chamber (44) and the check member (52) and the throttle valve seat (59) is adjusted.

2. The flow control valve as set forth in claim 1, wherein

the rod chamber (46) and the valve chamber (44) are arranged substantially concentrically, a check valve seat (53) is provided on an inner peripheral surface of the peripheral wall (44a) of the valve chamber (44), and the check member (52) can be brought into contact with the check valve seat (53) by the elastic member (54).

3. A flow control valve, wherein

inside a cylindrical casing (70), a meter-in inlet (73), a rod chamber (76) for housing an adjusting rod (75) to be advancable and retreatable in an axial direction, a throttle valve seat (89) arranged substantially concentrically with the rod chamber (76), and a meter-in outlet (77) are communicatively connected in that order,

a valve chamber (74) is provided in at least one of a leading end portion of the

adjusting rod (75) and the rod chamber (76), and a check member (82) inserted in the valve chamber (74) is urged toward the throttle valve seat (89) by an elastic member (84), and

the check member (82) and the throttle valve seat (89) can be moved relatively  
5 by advancing and retreating the adjusting rod (75) in the axial direction, and thereby, a throttle gap (G) formed between at least one of a peripheral wall (74a) of the valve chamber (74) and the check member (82) and the throttle valve seat (89) is adjusted.

4. The flow control valve as set forth in claim 3, wherein

the valve chamber (74) is provided inside the leading end portion of the  
10 adjusting rod (75), a check valve seat (83) is provided on an inner peripheral surface of the peripheral wall (74a) of the valve chamber (74), and the check member (82) can be brought into contact with the check valve seat (83) by the elastic member (84).

5. A cylinder apparatus having the flow control valve as set forth in any one of claims 1 to 4, wherein

15 inside a housing (3) of the cylinder apparatus, a fluid actuation chamber (11, 12) is communicatively connected to a pressure ports (P1, P2) via an actuation port (A1, A2) and a supply and discharge passage (21, 22), and an mounting hole (31, 32) communicatively connected to the supply and discharge passage (21, 22) is opened in an outer surface of the housing (3), and the cylindrical casing (40, 70) is attached to the  
20 mounting hole (31, 32), and

the actuation port (A1, A2) is communicatively connected to the meter-out inlet (43) or the meter-in outlet (77), and the pressure port (P1, P2) is communicatively connected to the meter-out outlet (47) or the meter-in inlet (73).

6. A cylinder apparatus having a flow control valve, wherein

25 inside a housing (3) of the cylinder apparatus, a fluid actuation chamber (11, 12) is communicatively connected to a pressure port (P1, P2) via an actuation port (A1, A2)

and a supply and discharge passage (21, 22),

an mounting hole (31, 32) opened in an outer surface of the housing (3) is provided, one end portion of the supply and discharge passage (21, 22) is opened in a bottom surface of the mounting hole (31, 32), and the other end portion of the supply  
5 and discharge passage (21, 22) is opened in a peripheral surface of the mounting hole (31, 32),

a cylindrical casing (40, 70) is attached to the mounting hole (31, 32), and a leading end portion of the cylindrical casing (40, 70) is brought into contact with or made to approach a bottom wall (31a, 32a) of the mounting hole (31, 32), and thereby, the  
10 actuation port (A1, A2) and the pressure port (P1, P2) are partitioned, and

valve elements (52, 53, and 59) (82, 83, and 89) of a flow control valve (35, 68) are arranged inside the cylindrical casing (40, 70) so that the actuation port (A1, A2) and the pressure port (P1, P2) can be communicatively connected to each other via the valve elements.

15 7. The cylinder apparatus having the flow control valve as set forth in claim 6, wherein

a barrel portion (40a, 70a) of the cylindrical casing (40, 70) is screwed in the mounting hole (31, 32).